

Trend Study 16C-8-02

Study site name: Pole Canyon Chaining .

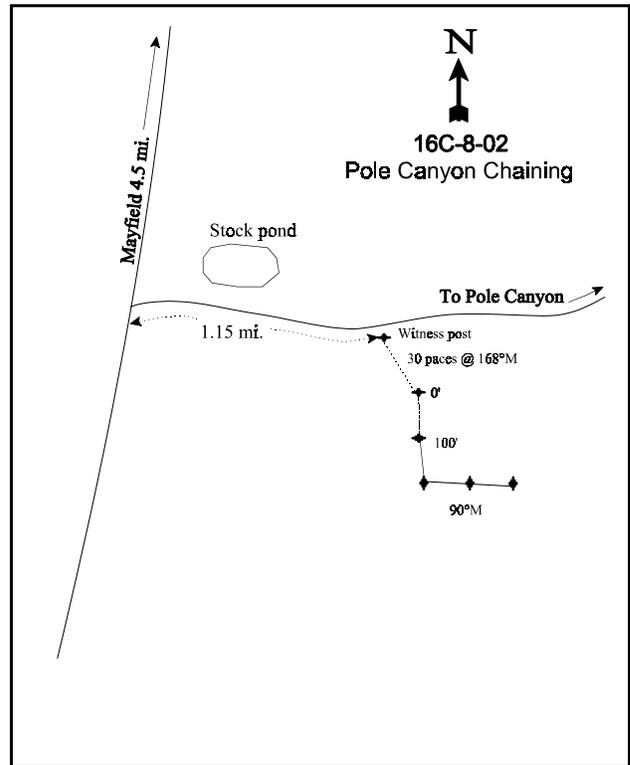
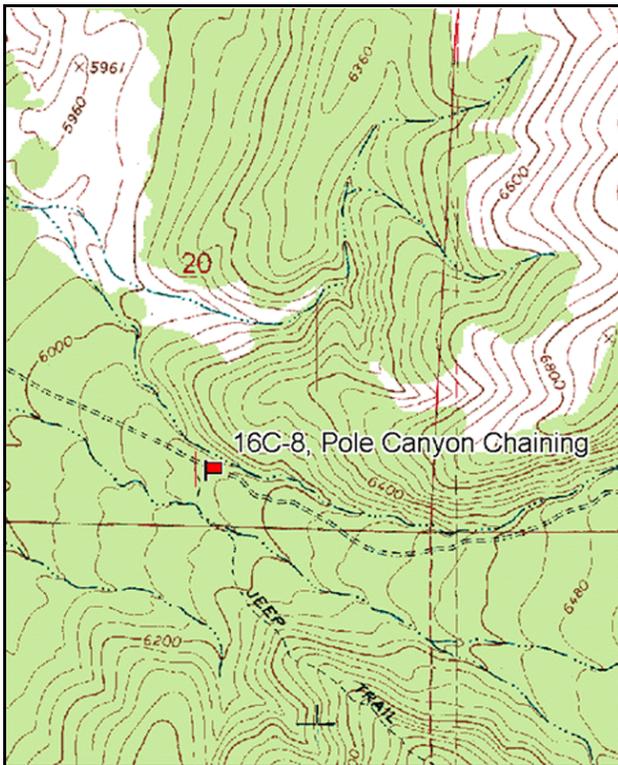
Vegetation type: Chained, Seeded P-J .

Compass bearing: frequency baseline 180 degrees magnetic (line 2-3 @ 90°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 3 ft.

LOCATION DESCRIPTION

From Mayfield, go south down Arapien Valley for 4.5 miles to the Pole Canyon Road. Turn east and go 1.1 miles to a witness post in a chaining. The witness post is 6 paces south of the road. From the witness post to the 0-foot baseline stake is 32 paces at 215 degrees magnetic. Browse tag #4091 marks the 0-foot baseline stake.



Map Name: Mayfield

Diagrammatic Sketch

Township 20S, Range 2E, Section 20

GPS: NAD 27, UTM 12S 4322204 N, 438353 E

DISCUSSION

Pole Canyon Chaining - Trend Study No. 16C-8

This study is located on an old pinyon-juniper chaining at the south end of the Mayfield Face. The treatment was done on this BLM land more than 30 years ago. The same area was sampled by a line-intercept transect in 1978. The site is on a fairly level alluvial fan at the mouth of Pole Canyon. Elevation at the site is 6,160 feet, and topography slopes gently to the west. The area is considered an important wintering area for deer. Pellet group quadrat frequency was moderately high in 1997 and 2002 at 53% and 48% respectively. Pellet group transect data collected in 2002 estimated 99 deer days use/acre (245 ddu/ha). No elk pellet groups were sampled and cattle use was light at an estimated 2 days use/acre (5 cdu/ha). Grasses were reported to be heavily to severely grazed by cattle in 1989 and 1997. In the past, this area has been permitted for grazing as part of the South Hollow allotment from May 1 to June 30.

Soils in the area are a very strongly calcareous, cobbly loam in the Fontreen series. Soil survey information characterizes this soil type to be moderately deep with a cobbly loam surface layer with 20-50% gravel and cobbles. Soil at the site have an effective rooting depth estimated at just over 10 inches. Soils are sandy clay loam in texture and have a slightly alkaline reactivity (pH = 7.4). Initially, the combined cover value for rock and pavement was high at 25% in 1989. This estimate was significantly lower in 1997 and 2002 at 11% and 15%. Litter cover has remained moderately high in all sampling periods, currently ('02) at 54%. However, vegetation cover is low, especially in 2002 with drought (9%). In 2002, percent bare soil had nearly the same estimate as the initial reading (27%). In the past, the area was susceptible to sheet erosion and excessive soil movement, and active gullies were present north and south of the site. An erosion condition class assessment was determined as slight in 2002. With the decline in vegetation cover in 2002, the ratio of protective cover (vegetation, litter, and cryptogams) to bare soil is marginal at 2.6:1.

For a chaining treatment done more than 30 years ago, the density of juniper and pinyon is moderately low. Point-center quarter data in 1997 estimated juniper density at 76 trees/acre and pinyon density at 26 trees/acre. The pinyon-juniper trees on the site had been cut down by chainsaws prior to the 2002 reading. The most numerous browse on the site is broom snakeweed, but density has oscillated greatly between readings. Initial density estimates were 8,733 plants/acre in 1989, increasing to nearly 15,000 plants/acre in 1997. Broom snakeweed density drastically declined with dry conditions in 2001 and 2002 to only 3,740 plants/acre. Preferred browse is very limited on the site with white-stemmed rubber rabbitbrush being the most common. Density was estimated at 1,640 plants/acre in 2002, with excellent young recruitment. Rabbitbrush was split into two subspecies in 2002, the white-stemmed palatable form (*Chrysothamnus nauseosus albicaulis*) and a green-stemmed less palatable form (*Chrysothamnus nauseosus consimilis*). Use has been light to moderate on white rubber rabbitbrush during all readings. Other preferred species that are present in very low numbers include four-wing saltbush, bitterbrush, and true mountain mahogany.

The herbaceous understory is very poor on this site, especially considering that the site was chained and seeded. Crested wheatgrass, the most common perennial species, significantly declined in nested frequency between 1997 and 2002. This species is often heavily grazed, but the decline in 2002 doesn't appear to be from livestock use. Project personnel described crested wheatgrass as being 3 inches of stem with no leaves in early July 2002. The combination of drought and defoliation by grasshoppers appears to be the causative factors. Perennial forbs are almost non-existent in all years, currently ('02) providing less than one-quarter of 1% cover. Annual forbs are moderately abundant, primarily bur buttercup, which provided three-fourths of the total forb cover in 2002. Most of the forbs are low growing and/or weedy increasers that provide very little forage or cover. The herbaceous component on this site is one of the poorest ever seen by project personnel on a chained pinyon-juniper site.

1989 APPARENT TREND ASSESSMENT

For a basically level site, there is an inordinate amount of soil erosion resulting in poor soil conditions. Soil trend appears down. Browse forage is very limited. The herbaceous understory is depleted, and at least in 1989, the key grass species were grazed beyond the 60% utilization stated in the allotment objectives.

1997 TREND ASSESSMENT

Trend for soil is slightly up. Erosion has declined since 1989, and appears to be minimal at this time. Percent bare soil has decreased from 27% to 19%. Another positive characteristic is that almost 50% of the vegetative cover is contributed by herbaceous species which protect soils better from high intensity summer storms. The only useful browse of much consequence is white-stemmed rabbitbrush which provides 25% of the browse cover. Its density is now up to 3,000 plants/acre, and shows good vigor and high reproductive potential. Use is light to moderate and percent decadence is low at 3%. Other preferred browse are in very low densities on this site (four-wing saltbush, true mountain mahogany, and antelope bitterbrush) and provide little forage. The major concern for the browse component is the alarming increase in broom snakeweed which has increased from 8,733 to 14,940 plants/acre. This increaser shrub may continue to increase with continued heavy livestock grazing in May and June of each year. The only positive attribute of this population is that it is now primarily composed of mature plants (83%). Trend for browse is considered stable, but quality of browse is very limited. The herbaceous understory has a slightly downward trend as both grasses and forbs declined in sum of nested frequency. Weedy annual species now make up almost 50% of the total herbaceous cover.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3), but quality browse is very limited

herbaceous understory - slightly down (2)

2002 TREND ASSESSMENT

Trend for soil is slightly down. Percent bare soil increased from 19% to 27%, and herbaceous vegetation cover declined as well. There was evidence of erosion even with low precipitation during the drought. Trend for browse is stable. White-stemmed rubber rabbitbrush is the most abundant palatable species on the site, although this species is rarely considered a key species. Recruitment is high at 44% and vigor is mostly normal. The herbaceous understory is in very poor condition and trend is down. Perennial species, both forbs and grasses, declined in sum of nested frequency. Crested wheatgrass, the most important perennial species, significantly declined in nested frequency and provided less cover than the annual forb bur buttercup in 2002. The herbaceous component is one of the poorest ever seen by project personnel on a chained and seeded site.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable (3)

herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 16C, Study no: 8

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'89	'97	'02	'89	'97	'02	'97	'02
G	<i>Agropyron cristatum</i>	_b 278	_b 262	_a 103	97	95	51	5.89	.55
G	<i>Bromus tectorum</i> (a)	-	_b 91	_a 4	-	36	2	.57	.01
G	<i>Poa fendleriana</i>	4	3	-	2	1	-	.01	-
G	<i>Poa secunda</i>	3	-	1	1	-	1	-	.00
G	<i>Sitanion hystrix</i>	5	2	-	2	1	-	.03	-
Total for Annual Grasses		0	91	4	0	36	2	0.57	0.00
Total for Perennial Grasses		290	267	104	102	97	52	5.93	0.55
Total for Grasses		290	358	108	102	133	54	6.51	0.56
F	<i>Alyssum alyssoides</i> (a)	-	50	53	-	18	24	.22	.28
F	<i>Antennaria rosea</i>	-	1	2	-	1	2	.00	.01
F	<i>Astragalus utahensis</i>	_{ab} 10	_b 18	_a -	4	8	-	.28	-
F	<i>Castilleja linariaefolia</i>	-	2	-	-	1	-	.03	-
F	<i>Collinsia parviflora</i> (a)	-	_b 11	_a -	-	5	-	.02	-
F	<i>Cryptantha</i> spp.	_b 18	_{ab} 13	_a 6	11	7	2	.14	.04
F	<i>Descurainia pinnata</i> (a)	-	27	25	-	14	10	.09	.28
F	<i>Erodium cicutarium</i> (a)	-	_b 9	_a -	-	5	-	.02	-
F	<i>Haplopappus acaulis</i>	2	-	-	1	-	-	-	-
F	<i>Lactuca serriola</i>	_b 20	_{ab} 7	_a -	10	4	-	.04	-
F	<i>Leucelene ericoides</i>	-	-	3	-	-	1	-	.00
F	<i>Lithospermum</i> spp.	7	3	4	3	1	3	.15	.05
F	<i>Machaeranthera canescens</i>	_b 13	_a 3	_a -	7	1	-	.00	-
F	<i>Microsteris gracilis</i> (a)	-	_b 23	_a -	-	10	-	.10	-
F	<i>Ranunculus testiculatus</i> (a)	-	_b 299	_a 151	-	89	53	4.55	2.01
F	<i>Senecio multilobatus</i>	2	-	-	1	-	-	-	-
F	<i>Streptanthus cordatus</i>	14	5	11	6	3	6	.01	.03
F	<i>Tragopogon dubius</i>	1	-	-	1	-	-	-	-
F	Unknown forb-perennial	-	1	-	-	1	-	.01	-
Total for Annual Forbs		0	419	229	0	141	87	5.01	2.57
Total for Perennial Forbs		87	53	26	44	27	14	0.69	0.14
Total for Forbs		87	472	255	44	168	101	5.71	2.72

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16C, Study no: 8

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Chrysothamnus nauseosus albicaulis	51	35	3.30	1.14
B	Chrysothamnus nauseosus consimilis	0	18	-	1.49
B	Chrysothamnus viscidiflorus viscidiflorus	6	0	.78	-
B	Gutierrezia sarothrae	77	57	4.39	1.24
B	Juniperus osteosperma	11	1	3.08	.03
B	Pinus edulis	6	2	1.74	.38
B	Purshia tridentata	1	1	.15	.15
B	Quercus gambelii	1	1	-	.03
Total for Browse		153	115	13.46	4.46

CANOPY COVER -- LINE INTERCEPT
Herd unit 16C, Study no: 8

Species	Percent Cover	
	'97	'02
Chrysothamnus nauseosus	-	.83
Chrysothamnus nauseosus hololeucus	-	1.42
Gutierrezia sarothrae	-	1.08
Juniperus osteosperma	5	.25
Pinus edulis	2	.67

Key Browse Annual Leader Growth
Herd unit 16C , Study no: 8

Species	Average leader growth (in)
	'02
Atriplex canescens	6.7

Point-Quarter Tree Data
Herd unit 16C , Study no: 8

Species	Trees per Acre		Average diameter (in)	
	'97	'02	'97	'02
Juniperus osteosperma	76	-	6.7	-
Pinus edulis	26	-	4.8	-

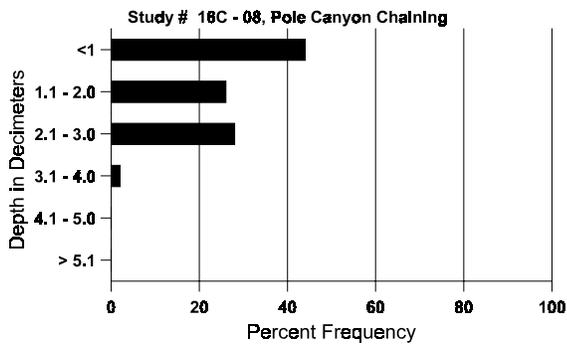
BASIC COVER --
Herd unit 16C, Study no: 8

Cover Type	Nested Frequency		Average Cover %		
	'97	'02	'89	'97	'02
Vegetation	356	246	4.00	30.03	9.11
Rock	164	187	5.75	4.93	7.54
Pavement	278	285	19.25	6.02	7.19
Litter	381	388	44.25	45.14	53.75
Cryptogams	81	50	0	1.67	1.52
Bare Ground	250	262	26.75	19.13	27.63

SOIL ANALYSIS DATA --
Herd Unit 16C, Study no: 08, Pole Canyon Chaining

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
10.3	61.4 (11.7)	7.4	48.7	27.1	24.2	5.9	11.25	195.2	.5

Stoniness Index



PELLET GROUP FREQUENCY --
Herd unit 16C, Study no: 8

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre 02	Days Use per Acre (ha) 02
Sheep	-	1	17	1 (3)
Rabbit	19	28	-	-
Elk	3	-	-	-
Deer	53	48	1288	99 (245)
Cattle	5	2	26	2 (5)

BROWSE CHARACTERISTICS --
Herd unit 16C, Study no: 8

A G R E	Y R E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Atriplex canescens</i>																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	50	73	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	43	44	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		00%			00%			00%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	0	Dec:	-			
												'97	0		-			
												'02	0		-			
<i>Cercocarpus montanus</i>																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	25	32	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	25	31	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		00%			00%			00%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	0	Dec:	-			
												'97	0		-			
												'02	0		-			
<i>Chrysothamnus nauseosus albicaulis</i>																		
S	89	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	89	13	1	-	-	-	-	-	-	-	14	-	-	-	466			14
	97	71	14	-	-	-	-	-	-	-	83	-	2	-	1700			85
	02	29	4	3	-	-	-	-	-	-	36	-	-	-	720			36
M	89	13	-	-	-	-	-	-	-	-	13	-	-	-	433	28	25	13
	97	41	18	1	1	-	-	-	-	-	61	-	-	-	1220	29	30	61
	02	27	2	2	-	-	-	-	-	-	31	-	-	-	620	20	23	31
D	89	-	-	1	-	-	-	-	-	-	1	-	-	-	33			1
	97	2	1	-	1	-	-	-	-	-	4	-	-	-	80			4
	02	5	5	3	-	2	-	-	-	-	11	-	-	4	300			15
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		04%			04%			00%			+69%							
'97		22%			.66%			01%			-45%							
'02		16%			10%			05%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	932	Dec:	4%			
												'97	3000		3%			
												'02	1640		18%			

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus consimilis																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	14	11	-	3	-	-	-	-	-	28	-	-	-	560	21	27	28
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	6	-	-	1	-	-	-	-	-	7	-	-	-	140		7	
X	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		00%			00%			00%										
'02		30%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'89	0	Dec:	0%				
											'97	0		0%				
											'02	740		19%				
Chrysothamnus viscidiflorus viscidiflorus																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	7	1	-	-	-	-	-	-	-	8	-	-	-	160	32	38	8
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		10%			00%			00%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)											'89	0	Dec:	0%				
											'97	200		10%				
											'02	0		0%				

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total						
		1	2	3	4		1	2							
Gutierrezia sarothrae															
S	89	779	-	-	-	-	-	-	779	-	-	-	25966		779
	97	6	-	-	-	-	-	-	6	-	-	-	120		6
	02	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	89	40	-	-	-	-	-	-	40	-	-	-	1333		40
	97	122	1	-	-	-	-	-	123	-	-	-	2460		123
	02	7	-	-	-	-	-	-	7	-	-	-	140		7
M	89	219	-	-	-	-	-	-	219	-	-	-	7300	10 9	219
	97	621	-	-	-	-	-	-	621	-	-	-	12420	10 9	621
	02	146	-	-	-	-	-	-	143	-	3	-	2920	7 8	146
D	89	3	-	-	-	-	-	-	3	-	-	-	100		3
	97	3	-	-	-	-	-	-	3	-	-	-	60		3
	02	34	-	-	-	-	-	-	21	-	-	13	680		34
X	89	-	-	-	-	-	-	-	-	-	-	-	0		0
	97	-	-	-	-	-	-	-	-	-	-	-	120		6
	02	-	-	-	-	-	-	-	-	-	-	-	3140		157
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>					<u>%Change</u>				
'89		00%		00%		00%					+42%				
'97		.13%		00%		00%					-75%				
'02		00%		00%		09%									
Total Plants/Acre (excluding Dead & Seedlings)										'89	8733	Dec:	1%		
										'97	14940		0%		
										'02	3740		18%		
Juniperus osteosperma															
S	89	1	-	-	-	-	-	-	1	-	-	-	33		1
	97	-	-	-	-	-	-	-	-	-	-	-	0		0
	02	-	-	-	-	-	-	-	-	-	-	-	0		0
Y	89	3	-	-	-	-	-	-	3	-	-	-	100		3
	97	12	-	-	-	-	-	-	12	-	-	-	240		12
	02	-	-	-	-	-	-	-	-	-	-	-	0		0
M	89	1	-	-	-	-	-	-	1	-	-	-	33	91 71	1
	97	5	-	-	-	-	2	-	7	-	-	-	140	- -	7
	02	1	-	-	-	-	-	-	1	-	-	-	20	- -	1
X	89	-	-	-	-	-	-	-	-	-	-	-	0		0
	97	-	-	-	-	-	-	-	-	-	-	-	80		4
	02	-	-	-	-	-	-	-	-	-	-	-	100		5
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>					<u>%Change</u>				
'89		00%		00%		00%					+65%				
'97		00%		00%		00%					-95%				
'02		00%		00%		00%									
Total Plants/Acre (excluding Dead & Seedlings)										'89	133	Dec:	-		
										'97	380		-		
										'02	20		-		

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Pinus edulis																		
Y	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
	02	1	-	-	-	-	-	1	-	-	1	-	1	-	40		2	
M	89	-	-	-	1	-	-	-	-	-	1	-	-	-	33	71	79	1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%			+73%							
'97		00%			00%			00%			-67%							
'02		00%			00%			50%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	33	Dec:	-			
												'97	120		-			
												'02	40		-			
Purshia tridentata																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	10	17	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8	31	0
D	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	1	-	-	-	-	-	-	-	-	-	1	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		00%			100%			00%			+ 0%							
'02		00%			100%			100%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	0	Dec:	0%			
												'97	20		100%			
												'02	20		100%			
Quercus gambelii																		
M	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	1	-	-	-	-	-	-	-	1	-	-	-	20	85	17	1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	100	22	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'89		00%			00%			00%										
'97		100%			00%			00%			+ 0%							
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'89	0	Dec:	-			
												'97	20		-			
												'02	20		-			